

# Using advanced wound dressings to manage wounds in a primary care in Kuala Terengganu



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In this article, a team of wound care professionals working at the primary care centre in Kuala Terengganu present a case series of five patients. The patients were treated by the team applying the principle of T.I.M.E. — a well evidenced concept of wound bed preparation and management. The acronym stands for 'T'issue management, meaning debridement (the removal of devitalised tissue), which is often the most important factor to allow a wound to heal; 'I'nfection and 'I'nflammation, which must be controlled for a wound to close; 'M'oisture balance, to avoid maceration or skin cell death; and 'E'pithelial edge, representing the cleansing of the wound edges so they will advance and eventually close. Apart from highlighting the importance of T.I.M.E, the article showcases the benefits of advanced wound dressings in aiding wound healing.

In 2017, a wound care team was established at the primary care centre in Kuala Terengganu. To aid patients' wound healing journeys, the team applied T.I.M.E (Tissue, Inflammation/infection, Moisture, Edge of wound) (Falanga, 2000) — a well established concept for wound bed preparation and wound management. In addition, the team used advanced wound dressings — instead of conventional dressings, consisting gauze with normal saline or water for irrigation — to improve wound healing. Advanced wound dressing consists of alginate, film, foam, hydrocolloid and hydrogel dressings, which can maintain moisture on the wound surface, additionally, some have an antimicrobial agent such as silver, honey or iodine dressings (Dabiri et al, 2016). They are designed to optimize wound healing at each stage, i.e. help manage different tissue types, control infection, maintain moisture and promote epithelization of the edge of wound (Guo and Dipietro, 2010). This case series was conducted to study the advantages of using advanced wound dressings (nano colloidal silver, chitosan biopolymer and sodium alginate components). Choosing the correct dressing decreases time to healing, provides cost-effective care, and improves patient quality of life.

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## Methodology

This is a case series of patients receiving wound care treatment at the Klinik Kesihatan Hiliran from January 2018 — April 2018.

- Five patients were randomly selected who fulfilled the inclusion criteria
- Inclusion criteria: patients with dirty wounds that were not suitable for conventional dressings and patients who are willing to come to clinic for dressing changes as appointed
- Data were collected retrospectively from standardized patient wound care forms and pictures were taken showing the progress of the wound
- Consent for debridement, advanced wound care, taking measurements and pictures of the wounds from patients/care givers was given.

## Procedures/materials

- Sterile water was used to clean the wounds
- Silver antiseptic spray was applied (left to dry for 1 minute) initially after sterile water is used
- Debrid gel (contains sodium alginate) for dirty wounds
- Chitoheal gel (contains chitosan) for clean wounds
- Secondary dressings like plain foam, gauze,

## Case series of five patients at the Klinik Kesehatan Hiliran

**Case 1.** A 20-year-old gentleman post removal of an infected implant. No known medical illness.



Day 1: 11.0 x 1.0 x 0.5 cm



Day 21: 5.0 x 1.0 x 0.5 cm



Day 42: Healed wound

**Case 2.** A 58-year-old woman with underlying diabetes mellitus, hypertension and peripheral vascular disease.



Day 1: 4.5 x 2.5 x 4.0 cm



Day 19: 3.5 x 2.5 x 4.0 cm



Day 42: Healed wound

**Case 3.** A 14-year-old boy who sustained a traumatic injury at the left medial aspect of his leg. No known medical illness.



Day 1: 6.0 x 3.0 x 4.0 cm



Day 20: 4.5 x 2.5 x 1.0 cm



Day 54: Healed wound

**Case 4.** A 69-year-old with underlying diabetes mellitus and hypertension, post operation trans metatarsal amputation of left foot for necrotizing fasciitis (23 days post-operative).



Day 1: 7.0 x 2.5 x 1.0 cm



Day 20: 6.0 x 1.5 x 0.5 cm



Day 70: (Post treatment) Healed wound

**Case 5:** A 48-year-old lady with underlying diabetes and hypertension presented after post-operative surgical wound debridement of left diabetic foot.



Day 1: 10.0 x 8.0 x 0.5 cm



Day 24: 6.0 x 4.5 x 0.5 cm



Day 132: 2.0 x 1.0 x 0.5 cm

or film were used to enclose the wounds. Plain foam was used for moderate wound exudate (Cases 4 and 5). Gauze was used for minimal wound exudate (Case 2). Film was used in wounds that produced no exudate (Cases 1 and 3).

All these cases showed good progression in wound healing with more granulation tissue and epithelialization seen with the use of silver antiseptic spray, sodium alginate-based gel and chitosan-based gel despite their various medical background. A sodium alginate-containing gel was used for wounds that were dirty on presentation, while chitoheal gel, which contains chitosan, was used when the wound appeared clean (Kazuo et al, 2015).

### Discussion

This case series showed that wound healing can be promoted by rapid growth of granulation tissue, reduce microbial burden, maintain moisture and increase epithelialization of wound which is according to T.I.M.E framework with the use of advanced wound dressing (Leaper et al, 2012). In 4 out of 5 cases (Cases 1 to 4), the wound healed in less than 3 months (wound healed with advanced wound dressing was statistically significant ( $p < 0.001$ ) compared with conventional wound dressing) (Kordestani et al, 2008). When the duration of wound healing is shortened, it can result in cost savings — total material costs and as well as nursing time (Lam et al, 2014) and improve the patient quality of life.

### Conclusion

Silver antiseptic spray can reduce the microbial burden, sodium alginate can absorb the

exudate, reducing infection and has haemostatic properties, while chitosan-based gel can provide moisture that can accelerate wound healing (Kordestani et al, 2008; Kujath and Michellsen, 2008; Kazuo et al, 2014).

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